

## VIEWS IN ALASKA.

During the past four summers expeditions have been sent to Alaska, under the auspices of the United States Coast and Geodetic Survey, to survey and map out with greater accuracy the waters of this little visited coast. Upon the completion of the Northern Pacific and Canadian Pacific railroads, this remote territory, which had been previously known to us only through the atlas, became suddenly more accessible and an object of interest to others besides the United States government. The voyage from Washington Territory is not a long one, and the trip has become popular, owing to the fact that the voyage may be confined almost entirely to the sounds and inland seas which border the northwestern portion of the Pacific coast. The character of the country is very different from that of our Western States, and presents a very different civilization, if civilization it may be called. There is a peculiar flavoring and intermixture of the Russian and Indian which gives a foreign interest to the American visitor or tourist.

There is a very natural misconception in regard to the climate of Alaska. Owing to its high latitude, one would expect to find an Arctic climate, but on the coast this is not altogether the case. The high range of mountains which extend along the southwestern coast shut off the cold northern and northeastern winds from the ice fields of the interior, while the warm equatorial currents of the Pacific, which correspond with the Gulf Stream on the eastern coast of the continent, pass close to the shore and temper the climate.

It must not be supposed that the climate is what we consider temperate here, as the latitude is too high and there are too many glaciers and icebergs in immediate proximity to render this possible; but the winters are mild as compared with the cold in the interior, and the changes of temperature between the summer and winter are not great.

As will be remembered, Alaska was purchased from the Russian government in 1867 for \$7,200,000. From north to south the extreme distance is about 1,100 miles, while the greatest breadth, not including the Archipelago, is about 800 miles. It comprises an area of about 514,700 square miles. Alaska can boast of having one of the largest rivers of this continent, the Yukon, which rises in British America and flows into the Pacific south of Norton Sound. It has a width of a mile at a distance of 600 miles from the sea, and its delivery of water is so great that it loses its saltiness ten miles from its mouth. Many of the mountains along the coast are volcanic, while Mt. St. Elias, with an altitude of some 17,000 feet, is higher than any mountain in Europe.

The scenery along the coast which has been visited by the government expeditions is very grand and beautiful, and the engravings, which we have prepared from photographs taken on the last expedition by Commander Thomas, do not do justice to its beauties, and are of interest only when studied and when the gigantic proportions of some of the features of the country are appreciated, by comparing the icebergs, the glaciers, and the waterfalls with objects with which we are familiar. The steamer used on these expeditions was constructed especially for use on these surveys, and a good idea of the steamer Patterson may be had from Fig. 5.

Fig. 1 represents Le Conte Glacier, which extends into Le Conte Bay, which is virtually inaccessible for vessels, owing to the immense amount of floating ice that is always to be found in the bay. Some idea of the danger may be inferred from Fig. 7, which shows the large iceberg at the mouth of the bay, towering hundreds or thousands of feet above the government vessel, which has ventured to run in among these floating islands. The glacier extends to the water's edge, and with the rise of the tide enormous blocks of ice are broken off and fall into the water with a thundering report that may be heard for miles. Another view of the glacier is seen in Fig. 11. The scenery shown in Fig. 2 is said to be as beautiful as any in Alaska, and the bluffs, beside which the steamer Patterson appears like a speck, rise to a height of some 2,000 or 3,000 feet, and are covered with green vegetation, while the ravine between the two mountains boasts of the most beautiful waterfalls and the wildest torrents, in the quieter pools of which trout and salmon are found. This is near the Baird Glacier. Fig. 3 is a view in the so-called Portland Canal. The Patterson is seen passing icebergs before entering Wrangel Narrows in Fig. 4, and in Fig. 5 she has passed the narrows and is lying at anchor with the Vixen alongside, while the Devil's Thumb may be seen in the distance. A wind-swept point on Thomas Bay is shown in Fig. 6, in which it is observed that the trees are developed only on one side, owing to the prevalence of the wind from one quarter of the compass. One of the most beautiful waterfalls in Alaska is that of Horn Cliff (see Fig. 8). The torrent seems to spring from the top of the cliff, and falls in a broken course to the waters of Frederick Sound below.

The astronomical station on the moraine of Baird Glacier is shown in Fig. 9. Fig. 10 gives a view of the settlement of Fort Wrangel, which boasts of a missionary establishment and a school for young Indians. It

is, or will be, a rather important center, and in the last picture on the page will be seen the steamer Alaskan, which plies between Fort Wrangel and the gold region up the Stikine River. Fig. 12 is the Patterson Glacier, which has its source near the Devil's Thumb, 20 miles from its foot.

Alaska is not, and never can be, an agricultural country. It has very little arable land, and the warm seasons are so short that crops have not sufficient time to mature. There is a farm near Fort Wrangel, which is worked by the young Indians of the school in connection with the mission, but this is the only tract in the Territory that could bear the title "farm." The wealth of the country consists in the game and fish, which is very abundant, and in the rich forests, which seem almost inexhaustible. The prevailing forest tree is the spruce, which grows to great size, and is found 2,000 and 2,500 feet above the sea. They grow often to a height of 200 to 250 feet, with a diameter of from 4 to 6 feet. Hemlock, alders, and willows also abound, but the most valuable tree, perhaps, is the yellow cedar, which is found in considerable abundance, and which grows to a large size. It is valuable for cabinet wood and for use in ship building. When the wood in the Pacific States becomes less abundant than it is at present, Alaska will be resorted to, and its enormous supply will be found of inestimable value. We propose supplementing this article with another descriptive of the life and character of the inhabitants of Alaska. So little has been written and is known of Alaska, that the researches of the government in that field become of interest and importance, and all credit for the work already achieved in due to the commanders of the various expeditions, Lieut.-Com. Henry F. Nichols, Lieut.-Com. Richardson Clover, Lieut.-Com. Albert S. Snow, and Lieut.-Com. Charles H. Thomas.

## Artificial Sugar, Coffee, and Cocaine.

The problem of producing cane sugar synthetically, though still far removed from the point when it can be used practically, has been brought another step nearer solution by the continued researches of Emil Fischer, in conjunction with Julius Tafel. In a recent paper, published in the *Berichte* (1889, 97), they give the results of their researches, the most remarkable of which is that they have succeeded, for the first time, in producing a sugar which can be fermented by yeast, like the natural sugars. The only difference from the latter is this, that the artificial sugar is optically inactive, but the discoverers hope to obtain optically active sugars by means of fermentation. The new sugar has, provisionally, been called *acrose*. The starting point is glycerin, from which, by way of its decomposition product, *acrolein*, two new kinds of sugar:  $C_6H_{12}O_6$ , had already some time ago been prepared by the authors, by means of treatment with baryta or alkalis. One of these sugars had been designated *alpha-acrosazon*. It has now been found that this latter may be partly converted, by means of hydrochloric acid, into a new substance, resembling glucoson, which the authors term *alpha-acrososon*. When this is treated in a dilute aqueous solution, with zinc dust and acetic acid, it is completely reduced inside of one hour. The mixture is then treated with hydrosulphuric acid, the precipitate filtered off, and the filtrate evaporated in a vacuum. The residue is dissolved in absolute alcohol, the solution filtered, and the filtrate, after being highly concentrated, mixed with much ether. This precipitates the new sugar, *acrose*, in colorless flakes, which soon change to a sirup, and has the greatest resemblance to natural sugars, having a sweet taste, reducing Fehling's solution, and responding to other tests characteristic of sugars.

Merck some time ago announced that he had succeeded in producing true salts of caffeine with citric, cinnamic, and hydriodic acids, which did not decompose or split up when coming in contact with water. It will be remembered that Prof. J. U. Lloyd (see *New Rem.*, 1881, 38) succeeded in preparing crystallized caffeine citrate, but this salt did not bear solution in water without decomposition. In what manner Merck succeeded in producing a permanent salt is not stated. But the citrate, as now available, is stated to be soluble in 30 parts of water at 42° C.

Alfred Einhorn has succeeded not only in making cocaine, the alkaloid of coca leaves, artificially from benzoyl-ecgonine, by introducing into it the methyl group, but he has also found that a whole series of other "cocaines" may be obtained by causing other groups to enter instead of the methyl group. In a recent paper (*Ber. d. deutsch. chem. Ges.*), he announces and describes three such compounds, one of which is the lower homologue of true cocaine, while the others are metameric or higher homologues. Two of these could not be obtained in a crystalline form, but only in form of oil. The third, however, as well as the salts of all three, are crystallizable. Whether any of these new "cocaines" possess special therapeutic properties has not yet been ascertained, or at least not been announced. It is not improbable that some of them will be found serviceable.—*Amer. Druggist*.

## Correspondence.

## Gas in Heating Pipes.

To the Editor of the Scientific American:

I have noticed, with much interest, the article in your journal of March 30 in regard to the question of gas from steam and hot water heating boilers. I have erected several steam and hot water plants, but have never noticed the occurrence spoken of; however, if such is the fact, I think the gas is hydrogen, formed by the decomposition of water in contact with the iron of the pipes and boiler; this would occur with either hot water or steam.

I think this would make an interesting question for your readers to discuss.

W. H. SHAY.

Fishkill Landing, N. Y., March 30, 1889.

## Gas Generated in Heating Pipes.

To the Editor of the Scientific American:

In your issue of March 30, I notice a letter from John P. Nessel, Newark, N. J., on the generation of gas in steam and hot water radiators. Last fall I had a hot water apparatus put into my dwelling house, with nine radiators. All those on the ground and first floors worked well, but on the second floor I had one radiator put up in the hall to heat rooms in Mansard story. Above this last was placed the usual expansion tank, with pipe to roof. Water is supplied to the boiler in basement from city water works, and a glass water gauge on the expansion tank shows how much water is in it at a glance.

Now, this radiator in the Mansard story hall does not work well, and got gradually colder and colder from the top downward, no matter how hot a fire. On opening the air cock in the radiator, what I supposed was air always rushed out with a hissing noise every time.

One day, during my absence from home for two weeks, my wife went up to this radiator with a small lamp in her hand to open the air cock. Immediately after opening the cock, what proved to be gas of some kind exploded on contact with the lamp flame, and continued burning at the air cock until water began to run from it.

The steam fitter who put up the apparatus could throw no light on the subject, and never before or since has had any similar case occur with any hot water apparatus put up by him. I should be glad to know what kind of gas is generated, the reason of its being generated, and how it may be prevented.

A. K. ROSS.

40 Cecil Street, Toronto, March 29, 1889.

[This is an interesting case. Perhaps some of our readers can throw light on the subject. If the gas should again show itself, we hope our correspondent will collect a specimen and have it examined by one of the college chemists.]

## Gas from Steam Boilers.

To the Editor of the Scientific American:

I wish to add my testimony to that of Mr. Nessel and others with reference to the occasional presence of gas in steam boilers. Though the discovery may not be new to scientific men, I will venture to say that little is known about it generally by those who use steam, and some ventilation of the subject may not be devoid of practical value.

The building of which I have charge is heated by steam taken from a boiler which is used exclusively for that purpose, the steam being allowed to go down at night. Some time ago a strong odor of coal gas was noticed by myself and others, coming from the air cock in a large radiator up stairs. I did not try it with a match as your other correspondents did, but the smell was unmistakable. This continued for several days, when I thought it advisable to blow out the boiler, as the water was becoming dirty. On applying the wrench to the stop cock in the blow-out pipe, the latter parted at a joint inside of the brickwork of the furnace, and the boiler was blown out in a very summary manner. After the pipe was repaired and the boiler resumed work, no more odor of gas was found.

From these data the theory at once suggested itself that the weak point in the pipe had been leaking, and that the gas, which was sucked in from the coal fire by the vacuum in the boiler when the steam went down, was given off again at the air cock when the pressure was put on in the morning.

This theory, however, while it seems satisfactory enough in the case I have mentioned, would, perhaps, not apply to the hot water apparatus.

W. F. VROOM.

St. Stephen, N. B., April 1, 1889.

## The Eiffel Tower.

The Eiffel Tower reached its full height, 1,178 feet, March 31. A newspaper correspondent who went to the top says that the ascent by the staircase took forty minutes, and by elevators it is to be made in five minutes. It is expected that the electric light on its top will enable one to read a newspaper at a distance of seven miles.